Workshop manual

Park 2/4WD 2000-2008

STIGA®

1 General instructions

Contents in this chapter

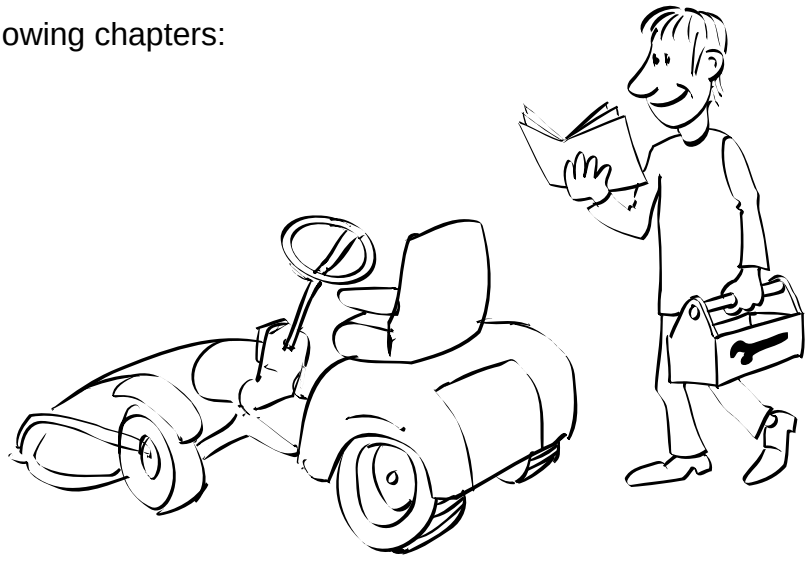
1.1 Introduction 2
1.1.1 Responsibility declaration 2
1.1.2 How this manual is used 2
1.1.3 Abbreviations 2
1.2 Safety Precautions 2
1.2.1 Symbols and general warnings 3
1.2.2 Warm parts 3
1.2.3 Moving parts 3
1.2.4 Lifting and blocking up 3
1.2.5 Cleanliness 3
1.2.6 Tightening torque 3
1.2.7 Sharp edges 3
1.2.8 Replacement parts 3
1.2.9 Inspection 3
1.3 Guarantee 4
1.3.1 Guarantee period 4
1.3.2 Extended guarantee 4
1.3.3 Component guarantee, chassis 4
1.3.4 Exeptions 4
1.3.5 Conditions for validity of the warranties 4
1.4 Unpacking and assembly 5
1.4.1 Unpacking 5
1.4.2 Battery 6
1.4.3 Assembly 8
1.4.4 Final checks 12
1.5 Service 13
1.6 Technical specifications 21
1.6.1 Machines 21
1.6.2 Motors 28
1.6.3 General tightening torque 28
1.7 Instructions for use 29

General

This Workshop Manual is intended for Stiga Park models 2000-2007. The article numbers and product names are designated in the tables under “Technical specification” at page 21.

This Manual do not cover repair instructions for the motors. Regarding motors, contact the respective representative in the actual country.
This Manual and its specifications are valid for machines in their original design. In case of modified or changed machine, i.e. the motor is replaced, the manual accordance is limited.

The manual is divided in the following chapters:
Chapter 1 is this chapter
Chapter 2 Chassis
Chapter 3 Steering
Chapter 4 Hydraulic system
Chapter 5 Belts
Chapter 6 Control Wires
Chapter 7 Electrical system



1.1 Introduction

1.1.1 Responsibility declaration

In spite of the great care we have taken there may be errors in this publication.
The author cannot be made liable for incorrect or missing information.
GGP SE reserves the right to regularly change product specifications without prior notice.
All the information in this book is based on the information available at the time of production. Illustrations and photographs may be arranged schematically, which implies that one picture may cover several models and therefore not correspond exactly with all models.

1.1.2 How this manual is used

To make this manual easy to understand we have divided the machine into its main systems and components. These parts are now the different chapters in the book.
Each chapter is divided up into sections.
There is a quick-guide on the cover of this book, which refers to the different chapters. In each chapter there is a detailed table of contents so that you can easily and quickly find what you are looking for.

For example, if you are looking for information on the Accessory Lifter you will find this in chapter 3, Chassis and Body. On the first page in chapter 3 there is a detailed table of contents which refers to the correct section, in this case section 3.1.

Always check that you are reading the right chapter for your particular machine before starting the repair work.

1.1.3 Abbreviations

The following abbreviations are used in this manual:

HST Hydrostatic Transmission PTO Power Take Off

1.2 Safety Precautions

This manual has been written primarily for trained mechanics working in a well-equipped workshop. Nevertheless, the manual contains such detailed information that it can also be of use to owners who wish to carry out simple service and repairs on their machine.
A basic knowledge of repairs, tools and repair instructions is, however, always a prerequisite for first-rate results.

A qualified mechanic should always be consulted if the owner does not have sufficient knowledge to carry out repairs.

During the warranty period all service must be carried out by an Authorised Workshop for the warranty to be valid.

The following basic points should be observed if the machine is to function perfectly:

- Follow the service schedule.
- Be on the alert for sudden vibrations or abnormal noise to avoid major breakdowns.
- Always use Genuine Spare Parts
- Follow the descriptions in this manual carefully. Do not take any short cuts.

1.2.1 Symbols and general warnings

Warning!

This symbol indicates a risk of personal injury or damage if the instructions are not followed.

Note!
This text indicates a risk of damage to the material or risk of unnecessarily complicated work if the instructions are not followed.

1.2.2 Warm parts

Please observe that engine and exhaust system picks up a lot of heat during use. This applies above all to the silencer of machines equipped with catalytic converter.
To avoid injuries, allow the machine to cool before any kind of repairs are made to or near parts of the engine or exhaust system.

1.2.3 Moving parts

The machines are all equipped with v-belt transmissions. Always stop the engine and remove the starter key before inspections or repairs are carried out.
Always use extreme caution when testing systems with moving parts to avoid injuries.

Always use Genuine Spare Parts during service work.

1.2.4 Lifting and blocking up

Before work under the machine, always make sure that lifting devices and jack-stands are approved for the weight.
Work safe!

1.2.5 Cleanliness

Clean the machine before starting repairs. Dirt that penetrates into sensitive components can seriously influence the service life of the machine.

1.2.6 Tightening torque

Unless otherwise stated the tightening torque in the tables in the section Technical specifications must be used for the different sizes of screws. This does not refer to self-tapping screws, which are mainly used for the assembly of body parts.

1.2.7 Sharp edges

Watch out for sharp edges, especially when working with the mower deck. The blades can be very sharp. Always wear gloves when working with the blades.

1.2.8 Replacement parts

Always use Genuine Spare Parts during service work.

1.2.9 Inspection

Each part dismantled in conjunction with service work must be inspected.
Examine for: wear, cracks, out of roundness, straightness, dents, discolouring, abnormal noise and jamming.

1.3 Guarantee

1.3.1 Guarantee period

For consumer use: two years from date of purchase.

For professional use: 200 hours or three months, whichever comes first.

1.3.2 Extended guarantee

The guarantee period can be extended to a maximum of 300 hours or 3 years from the date of purchase provided that the prescribed basic services have been carried out at an authorised Stiga Service workshop during the relevant guarantee period. The services must be verified in the service book.

1.3.3 Component guarantee, chassis

Faults occurring in the machine's bearing in the articulated steering joint, as well as the front and rear chassis, are covered by a 10 year component guarantee from the date of purchase

The guarantee is valid provided that the prescribed basic services have been carried out at an authorised service workshop during the relevant guarantee period. The services must be verified in the service book.

1.3.4 Exeptions

The extended warranty does not cover damage due to the following:

- Neglect by users to acquaint themselves with accompanying documentation.
- Carelessness.
- Incorrect and non-permitted use or assembly.
- The use of non-genuine spare parts.
- The use of accessories not supplied or approved by the manufacturer.

Neither does the warranty cover:

- Wearing components such as blades, belts, wheels,battery and cables.
- Normal wear.
- Engine and transmission. These are covered by the engine manufacturer's warranties, with separate terms and conditions.

The purchaser is covered by the national laws of each country. The rights to which the purchaser is entitled with the support of these laws are not restricted by this warranty.

1.3.5 Conditions for validity of the warranties

The fully completed warranty card must be sent to Stiga´s subsidiary or distributor.

In the event of a claim, the service history must be confirmed with a copy of the service book.

1.4 Unpacking and assembly

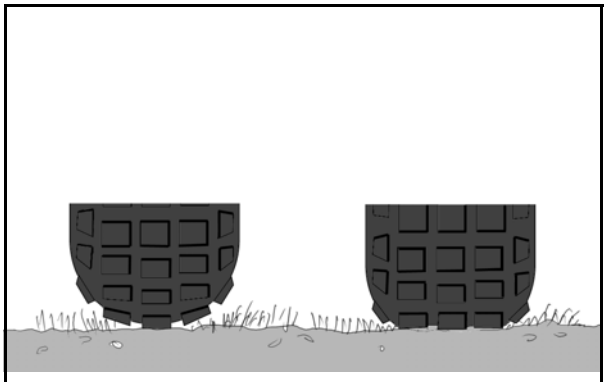
Every Stiga Park has undergone an extensive control programme before delivery. The machines are delivered as completely assembled as possible.
Thanks to this the assembly on delivery is rapid and easy.
The correct and careful assembly of the machine on delivery is a simple way of ensuring satisfied customers!

! Note!
The machine shall remain placed on the pallet during the unpacking and assembly.

1.4.1 Unpacking

Open up the crate and release the part as follows:

1. Check the air pressure in the tyres. The pressure is designated on the floor mat. The air pressure in the tyres is of critical importance for the performance and handling of the machine. The correct air pressure for mowing is 0.6 bar (9 psi) in the front tyres, and 0.4 bar (6 psi) in the rear tyres.
   When using heavy accessories, e.g. snow thrower, it may be necessary to increase the pressure somewhat. However, the maximum permitted pressure is always 0.8 bar (12 psi).
   Too high pressure in the tyres leads to that the machine drives poor due to:



- A small surface in contact to the ground.
- Hard tyre = less flexibility = self cleaning characteristic deteriorate.

2. Remove the following parts from the package and put them on the floor.

- The battery (some models).
- The steering wheel.
- The plastic bag, containing owners manuals, information video and assembly screws.

1.4.2 Battery

The battery can be of the following two types, depending on tha actual machine:

- Valve regulated type (A)
- Dry charged type (B)

Depending on the battery type, load and assemble the battery, following the actual instruction below.

A

B

Valve regulated battery

This battery needs limited maintenance. Is has no electrolyte levels or plugs.

Warning!

Do not wear rings, metallic bracelet, chain round the neck or similar metal objects when working with the battery. It can cause short-circuit, burns and fire.

Warning!

The battery must be fully charged before being used for the first time. The battery must always be stored fully charged. If the battery is stored while discharged, serious damage will occur.

<u>Charging with the engine</u>

The battery can be charged using the engine's generator as follows:

1. Install the battery in the machine as shown below.
2. Place the machine outdoors or install an extraction device for the exhaust fumes.
3. Start the engine according to the instructions in the user guide.
4. Allow the engine to run continuously for 45 minutes.
5. Stop the engine. The battery will now be fully charged.

<u>Charging using battery charger</u>

When charging using a battery charger, a battery charger with constant voltage must be used.

Ordering number: 1136-0602-01.

The battery can be damaged if a standard type battery charger is used.

Dry charged battery

Dry charged batteries are delivered without battery acid in their cells.

Warning!
Filling with battery acid shall take place in a well illuminated and ventilated place with rapidly access to fluiding water for rinsing.

Warning!
Wear rubber gloves and eye protection and handle the acid with great care to avoid spillage.

Warning!
The acid can burn the skin and destroy clothing and other materials it comes in contact with.

Warning!
Do not wear rings, metallic bracelet, chain round the neck or similar metal objects when working with the battery. It can cause short-circuit, burns and fire.

Maintain the dry charged battery as follows:

1. Fill carefully all cells with battery acid. The acid level shall be ca 5 mm above the cell packet edges.
2. Let the battery acid draw in into the cell material during 20 minutes. Adjust after that the cell levels again.
3. Let the battery stand for 2 hours before use. During this time it is suitably to assemble the rest of the machine as described below.
4. After 2 hours, install the battery as described below.

Installation of battery

See also the respective installation manual, delivered with the machine.

After the battery is charged, remove the motor casing and install it in the machine. Connect first the red cable to plus (+) and then the black cable to minus (-).

If the cables are disconnected/ connected in the wrong order, there is a risk of a short-circuit and damage to the battery.

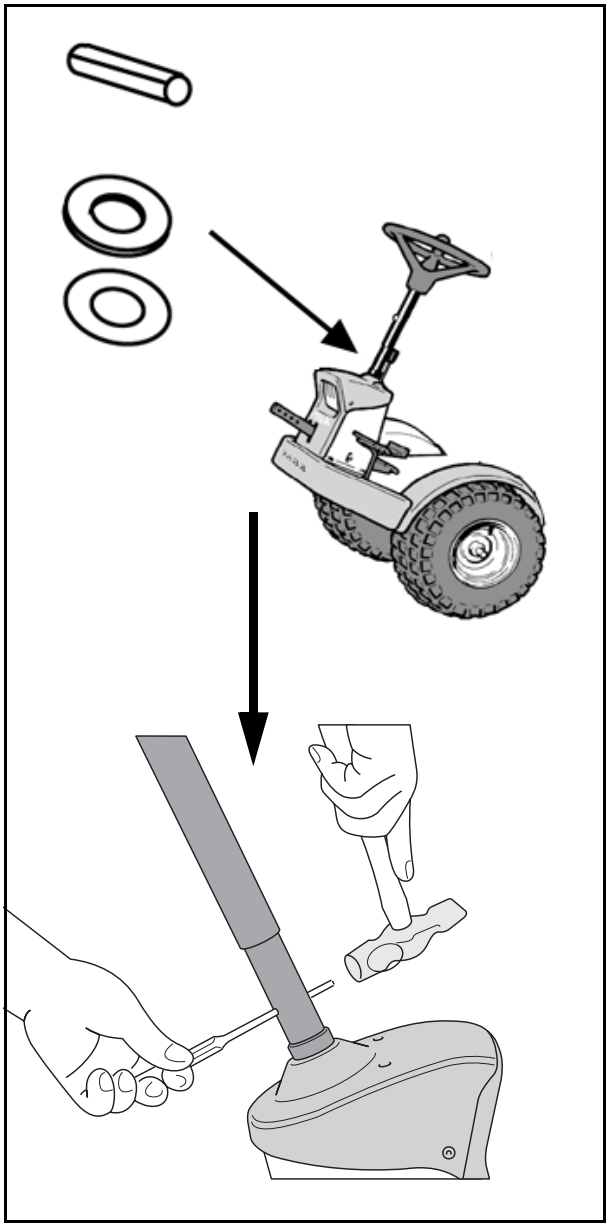
If the cables are interchanged, the generator and the battery will be damaged.

The engine must never be driven with the battery disconnected. There is a risk of serious damage to the generator and the electrical system.

1.4.3 Assembly

The assembly procedure shall take place in a clean, well illuminated and dry place.

Assemble the machine as follows:



Assembly of steering wheel

<u>Instructions for machines with mechanic steering</u>:

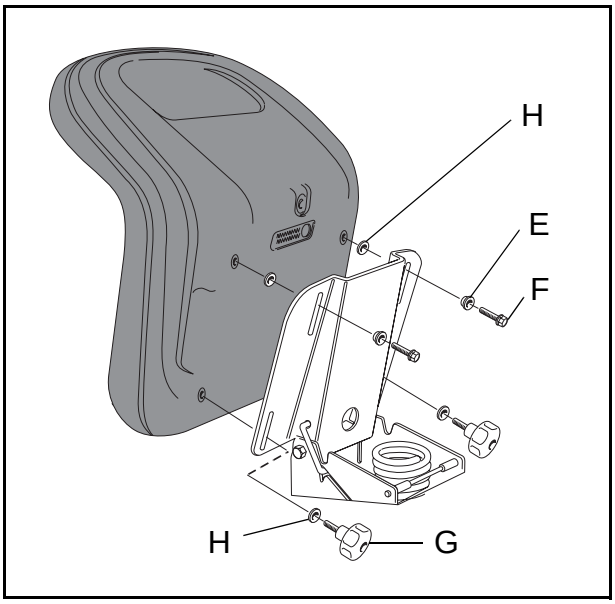
The machine is delivered with two shims, one with a thickness of 0.5 mm and one with a thickness of 1.0 mm.
In order to minimise the axial play in the steering column, the shim washers (0.5 mm) and/or (1.0 mm) must be installed on the steering column between the steering column jacket and the bracket as follows.

1. Install the steering column jacket on the steering column and secure by knocking in the tension pin approximately 1/3 of its length.
2. Pull the steering column jacket and the steering column up.
3. From the outside, check whether no washers, the 0.5 mm washer, the 1.0 mm washer or both washers can be inserted into the gap. The washer/washers must not be forced in, as there must be a little axial play.
4. Pull out the cotter pin and dismantle the steering wheel jacket.
5. Install the washer/washers in accordance with point 3 above.
6. Install the steering column jacket on the steering column and secure by knocking in the tension pin fully. Use a counterhold. Also make sure that the logo on the steering wheel is in the correct position.

<u>Instructions for machines with hydraulic steering</u>:

1. Adjust the machine in the straight forward direction.
2. Attach the steering wheel with the logotype readable from the driver position.

Assembly of seat (adjusting knobs under)



Install the mounting in the rear (upper) holes as follows:

1. Install the shoulder washers (E) on the screws (F).
2. Insert the screws through the slots in the bracket. Place a washer (H) between the seat and the bracket.
3. Tighten the screws in the seat. Tightening torque: 9±1.7 Nm.

If the screws are tightened more than 9±1.7 Nm, the seat will be damaged.

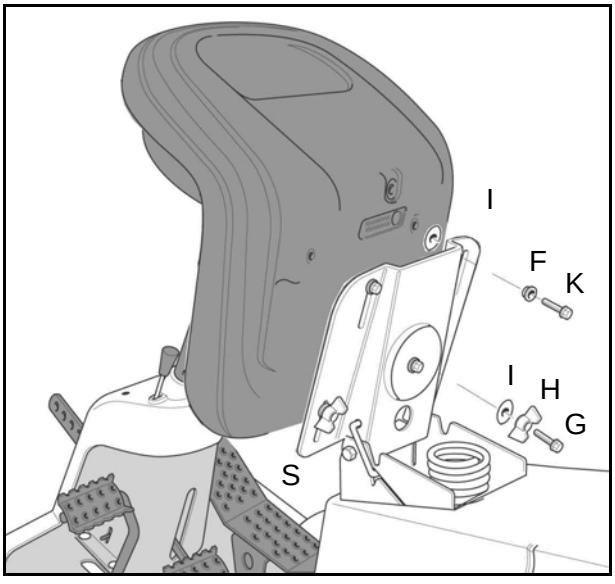
4. Check that the seat moves easily in the slots in the bracket.

Install the mounting in the front (lower) holes as follows:

1. Install a washer (H) on each knob (G).
2. Insert the knobs through the slots in the bracket and tighten by hand in the seat.
3. Fold the seat down and place it in the desired position.
4. Tighten the screw knobs (G) by hand.

The screw knobs (G) and the seat will be damaged if tools are used.

Assembly of seat (adjusting wings under)



Release the catch (S) and fold up the seat bracket.

Install the mounting in the rear (upper) holes as follows:

1. Install the shoulder washers (F) on the screws (K).
2. Insert the screws through the slots in the bracket. Place a washer (I) between the seat and the bracket.
3. Tighten the screws in the seat. Tightening torque: 9±1.7 Nm.

If the screws are tightened more than 9±1.7 Nm, the seat will be damaged.

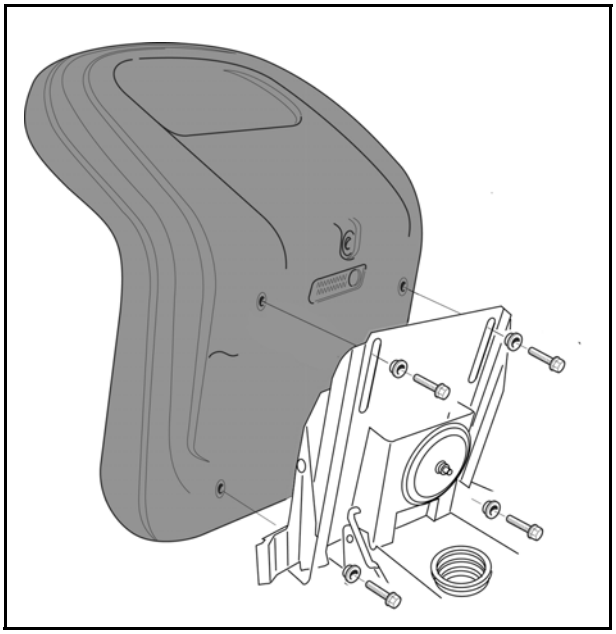
4. Check that the seat moves easily in the slots in the bracket.

Install the mounting in the front (lower) holes as follows:

1. Install the screw knobs (H) on the screws (G).
2. Install a washer (I) on each screw.
3. Insert the screws through the slots in the bracket and tighten by hand in the seat.
4. Fold the seat down and place it in the desired position.
5. Tighten the screw knobs (H) by hand.

The screw knobs (H) and the seat will be damaged if tools are used.

Assembly of seat (adjusting by lever)



1. Remove the following components from the seat bracket:
   - 4 Nuts (for transport locking, not used).
   - 4 Screws.
   - 4 Shoulder washers.
2. Position the seat over the mounting in the seat bracket.
3. Install the shoulder washers on the screws.
4. Insert the screws with the attached shoulder washers through the slots in the seat bracket and the holes in the seat plate. Screw the seat into place.

Tightening torque: 9±1.7 Nm.

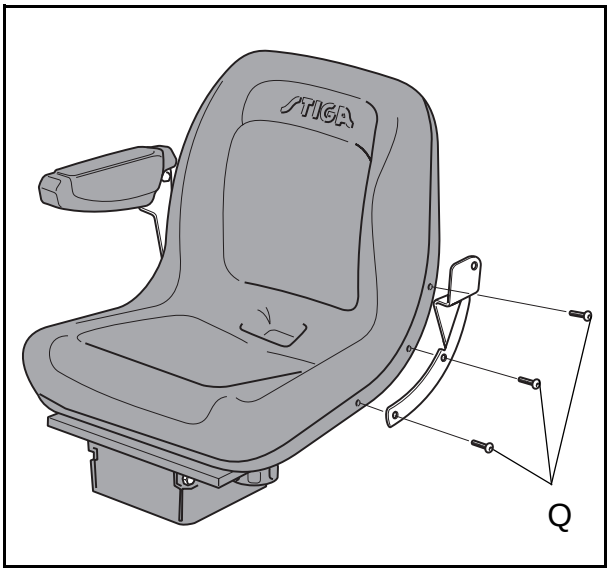
If the screws are tightened more than 9±1.7 Nm, the seat will be damaged.

5. Check that the seat moves easily in the slots in the bracket.

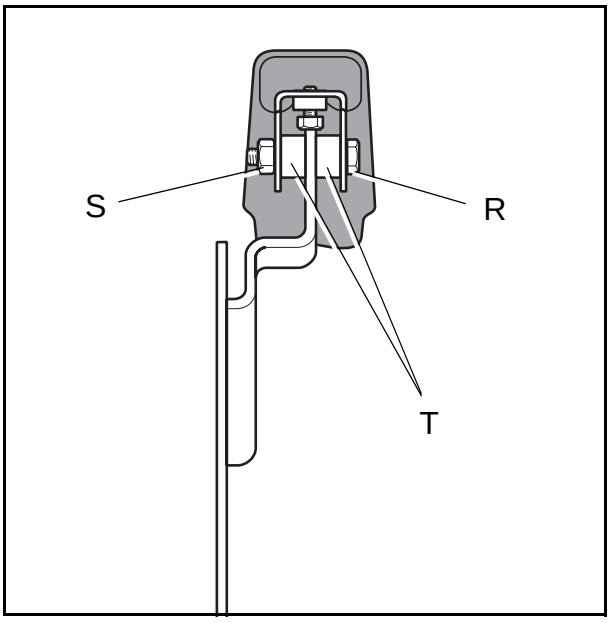
Arm rest (if applicable)

The arm rests and the installation components are supplied in a separate box. Assemble as follows:

1. Assemble the left and right mounts onto the seat. Use 3 screws (Q) supplied at each side.



2. Assemble the arm rests with screws (R), nuts (S) and spacers (T).
3. Tighten the screws so that the arm rests simply can be folded up/down.



Towing plate

Fitting according to customer requirements.

Engine oil

Check the oil level in the engine and top up if necessary.

HST oil

Check the oil level in the HST’s expansion tank after test driving, and top up if necessary.

1.4.4 Final checks

Removing from pallet

All the above measures shall have been done with the machine standing on the pallet. Now, loosen the remaining straps and roll off the machine from the pallet.
Fit and adjust accessories.

Test driving

Warning!

Do not drive without a work equipment (mover deck) attached. Risk for turning over.

Drive the machine for a few minutes. Test all the functions. Pay special attention to the safety functions. If the machine is to be delivered with mower deck or other accessories, fit these before test driving the machine.

HST oil

Check the oil level in the HST's expansion tank after test driving, and top up if necessary.

Steering chain / Steering wire

Check that the steering chain / steering wire is sufficiently taut. Adjust if necessary.

Miscellaneous

Give the machine a general inspection.
- Is the machine clean?
- Is there any oil leakage?
- Abnormal noise or rattle?

Receipt

By filling in the guarantee certificate you guarantee that the delivery service has been correctly conducted.
Remember to make sure that the customer receives all the documentation when the machine is collected / delivered.

1.5 Service

Every new machine is delivered with a service book. This service book is part of the active post-market programme and shall be kept in a safe place during the entire lifetime of the machine. Hand over the service book if the machine is sold in 2:nd hand.

Service should generally be carried out at least every 50 operating hours (exception of the first service), although in accordance with the conditions below.

There are three different grades of service events. Every service event consists of a number of service points as described in the following paragraphs. Every service point has a number which refer to a describing text after the schedules.

Some service points do not coincide with the scheduled service intervals, but shall be performed in connection with a scheduled service when possible. E.g. some items shall be performed at every second service and some also between two services. These service points are described with procedure and interval in the respective “Instruction for use”.

Typical service points wich not coincide with scheduled service intervals are:
- Cleaning/changing air filter in some motors.
- Change of oil in some motors.
- Valve adjustments for some motors.
- Change of transmission oil in 4 WD machines.
- Change of spark plug in some motors.

1.5.1 First Service

The first service shall be performed within 5 hours of running and includes the service points as per the table below.

This service is very important to safeguard the continuing function of the machine.

Number	Service point
1	Safety check.
2	Tyres, air pressure.
3	Engine oil, change. Machines with filter, replace it together with the oil.
4A	Oil level in HST, check (Valid for machines with HST only).
5	Belt transmissions, check.
6	Steering adjustment.
7	Battery check.
21	Test driving.
*	Transmission oil, change and tank filter/HST filter, clean. (Valid for 4WD machines only)
*	Filter for transmission oli, change. (Valid for 4WD machines with external hydraulic only)

*) See section 4.

1.5.2 Intermediate Service

The intermediate service shall be conducted between two basic services. That means:

For Pro Diesel: 100 hours after a basic service.

For all other machines: 50 hours after a basic service.

Number	Service point
1	Safety check.
2	Tyres, air pressure.
3	Engine oil, change.
4A	Oil level in HST, check. (Valid for machines with HST only).
6	Steering adjustment.
9	Air filter, cleaning.
10	Air filter catalytic converter, cleaning.
11	Cooling fins, clean.
12	Lubrication

The intermediate service is not as extensive as the Basic Service and can therefore be conducted by the customer, or by an authorised Service Workshop. Regardless of who conducts the service, it must be documented in the service book.

1.5.3 Basic Service

The basic service shall be conducted as follows:

For Pro Diesel: Every 200 hours or every year, which first occur.

For all other machines: Every 100 hours or every year, which first occur.

The Basic Service must always be conducted by an authorized Service Workshop, and documented with a stamp in the service book.

Number	Service item
1	Safety check
2	Tires, air pressure
3	Engine oil, change. Machines with filter, replace it together with the oil.
4B	Oil in HST, check/replace. Machines with filter, replace it together with the oil. (Valid for machines with HST only)
5	Belt transmissions, check
6	Steering adjustment
7	Battery check
8	Air filter for engine, clean/ replace

Number	Service item
9	Air filter catalytic converter, clean (Valid for machines with catalytic converter only)
10	Cooling fins, clean
11	Spark plug, check/replace
13	Transmission, check
14	Speed check
15	Bearing boxes, check**
16	Exhaust system, check*
17	Electrical system, check*
18	Mower deck, check**
19	Blades, check**
20	Power take-off, check
21	Control check
22	Valve play***
23	Test driving

*) See also “Safety check”.

**) See also the mover deck manual.

***) See the motor manual.

1.5.4 Description of service points

1. Safety check

Check the safety functions. It is often appropriate to do this check in conjunction with test driving. The following items shall be checked at all machines:

- No leakage on fuel lines and connections.
- No mechanical damages to the electrical cables. All insulation intact.
- The muffler shall be undamaged and its screws tightened. No exhaust leakage in connections.

The electrical check items at the respective machine up to model 2004 are listed in the tables below. For models 2005 and up, see the respective “Instructions for use”.

Senator, electrical safety check

Test	Status	Action	Result
1	Brake pedal not pressed. PTO activated. No gear activated.	Turn the key and make a start attempt.	Motor shall not start.
2	Brake pedal pressed. PTO activated. No gear activated.	Turn the key and make a start attempt.	Motor shall not start.
3	Brake pedal not pressed. PTO not activated. A gear is activated.	Turn the key and make a start attempt.	Motor shall not start.
4	Motor running. PTO activated.	Operator rises from the seat.	Motor shall stop.
5	Motor running. A gear activated.	Operator rises from the seat.	Motor shall stop.
6	Motor running.	Disconnect cable from the shut off valve.	Motor shall stop after a few minutes.

President and Comfort, electrical safety check

Test	Status	Action	Result
1	Brake pedal not pressed. PTO not activated.	Turn the key and make a start attempt.	Motor shall not start.
2	Brake pedal pressed. PTO activated.	Turn the key and make a start attempt.	Motor shall not start.
3	Motor running. PTO activated.	Operator rises from the seat.	Motor shall stop.
4	Motor running.	Disconnect cable from the shut off valve.	Motor shall stop after a few minutes.

Royal and Pro 16, electrical safety check

Test	Status	Action	Result
1	Brake pedal not pressed. PTO not activated.	Turn the key and make a start attempt.	Motor shall not start.
2	Brake pedal pressed. PTO activated.	Turn the key and make a start attempt.	Motor shall not start.
3	Motor running. PTO activated.	Operator rises from the seat.	Motor shall not start.
4	Cruise control activated.	Operator rises from the seat.	Cruise control shall disengage
5	Motor running.	Disconnect cable from the shut off valve.	Motor shall stop after a few minutes.

Pro 20, electrical safety check

Test	Status	Action	Result
1	Brake pedal not pressed. PTO magnetic clutch not activated.	Turn the key and make a start attempt.	Motor shall not start.
2	Brake pedal pressed. PTO magnetic clutch activated.	Turn the key and make a start attempt.	Motor shall not start.
3	Motor running. PTO magnetic clutch activated.	Operator rises from the seat.	PTO magnetic clutch shall disengage.
4	Cruise control activated.	Operator rises from the seat.	Cruise control shall disengage.
5	Hydraulic lift in neutral position.	Attempt to engage the PTO magnetic clutch.	PTO magnetic clutch shall not engage.
6	Motor running.	Disconnect cable from the shut off valve.	Motor shall stop after a few minutes.

Pro Diesel, electrical safety check

Test	Status	Action	Result
1	Brake pedal not pressed. PTO magnetic clutch not activated.	Turn the key and make a start attempt.	Motor shall not start.
2	Brake pedal pressed. PTO magnetic clutch activated.	Turn the key and make a start attempt.	Motor shall not start.
3	Motor running. PTO magnetic clutch activated.	Operator rises from the seat.	PTO magnetic clutch shall disengage.
4	Cruise control activated.	Operator rises from the seat.	Cruise control shall disengage
5	Hydraulic lift in neutral position.	Attempt to engage the magnetic clutch.	PTO magnetic clutch shall not engage.

2 Tyres, air pressure

Check the air pressure. Adjust if necessary. The recommended air presure is designated at the floor mat.

3 Engine oil and oil filter

See the “Instructions for use”, delivered with the machine or “Instructions for use” at page 29. See also the engine manufacturer manual.

4 Oil, HST

See the “Instructions for use”, delivered with the machine.

5 Belt transmissions, check

Check the condition of all the belts and belt tensioners.

6 Steering, adjustment

See section 3.

7 Battery, check

Valid for dry charged batteries only. Check the acid level. Top up with distilled water if necessary. See page 6-7.

8 Engine air filter

See the “Instructions for use”, delivered with the machine. See also the engine manufacturer manual.

9 Catalytic converter air filter

See the “Instructions for use”, delivered with the machine. See also the engine manufacturer manual.

10 Cooling fins

Remove protective covers from the engine and cleans between cooling fins. Use a brush and compressed air. See also the engine manufacturer manual.

11 Spark plug

Remove the spark plug (not valid for Pro Diesel) and clean it or replace if necessary. See also the engine manufacturer manual.

12 Lubrication

Lubricate the articulation point (4 nipples) and all moving parts such as wires and levers. See also the instruction manual, delivered with the machine.

13 Transmission

Listen for abnormal noise.
Manual models: Check that the drive function works properly at all gears. Adjust if required.

14 Speed check

Check that the speed corresponds to the specified value. See pages 18-22.

15 Bearing boxes

Listen for abnormal noise from the bearings. Check that there are no wear, play or seizure.

16 Exhaust system

Check that there are no cracks, leakage or other damages. Check the attachment devices. See also the engine manufacturer manual.

17 Electrical system

Check that there are no damaged cables, contacts or other devices. Check that all cables are properly secured to the chassis and with cable holders. Check that there is no friction between cables and chassis, which can result in cable damage and short circuit.

18 Mower deck

Warning!

The blades are sharp. Always wear gloves when working with the blades to avoid injury.

Check if there are collision damages or wear at the deck body and painting. Align, repair and touch up the painting as required.

Check the tightening of the bearing boxes screws and tighten.

Rotate the blades and check the the shafts are correct, not bent, no abnormal bearing noise and no plays.

Check the belts and their tensions, see section 4.

Check that the lifting mechanism moves evenly, not jammed and no play and that it locks in desired position.

Check the electrical function of the electrikal mower lifter (if applicable).

Check the plastic guide bar between the blades. Replace if required.

19 Blades

Warning!

The blades are sharp. Always wear gloves when working with the blades to avoid injury.

Check that the blades are sharp. Sharpen as reqiured.

20 Power take-off (PTO)

Check that the magnetic clutch (if applicable) engage the work equipment rotation in the desired time and that it not slips during normal load. Replace the clutch if necessary.

Check that the power take-off belt (if applicable) engage the work equipment rotation in the desired time and that it not slips during normal load. Adjust if necessary. See section 4.

Check that the power take-off brake (if applicable) brakes the rotation movement in the desired time. Adjust if necessary. See section 4.

21 Control check

Check that all controls function properly, that there are no jammings or excessive plays. Adjust if nesaccary. See section 5.

22 Valve play

See the engine manual regarding procedure and interval.

23 Test driving

Drive the machine during a few minutes and make the following attentions in different speeds and turnings in right and left. Check that all functions work evenly and proper and without any abnormal noise.

- Brake function
- Clutch function
- Power take-off
- Steering

Check that there are no abnormal vibrations.

1.6 Technical specifications

1.6.1 Machines

2000/2001 Models	SENATOR 13-6112-11 13-6112-12	COMFORT 13-6113-22	PRESIDENT 13-6113-11 13-6113-12	ROYAL 13-6114-11 13-6114-12	PRO 16 13-6216-11 13-6216-12	PRO 18 13-6218-11 13-6218-12	PRO 20 13-6221-11 13-6221-12
MOTOR							
B&S I/C	x	x	x				
B&S Vanguard					x	x	x
B&S Intek				x			
Cylinders/Hp	1/12,5	1/15,5	1/12,5	2/16	2/16	2/18	2/20
FUEL							
12 litres	x	x	x	x	x	x	x
Fuel meter				x	x	x	x
External fuel cap	x	x	x	x	x	x	x
TRANSMISSION							
Gearbox 5+R	MST205						
HST		K46	K46	K46	K62	K62	K66
Switchable differential lock					x	x	x
Wheel shaft dia	3/4"	3/4"	3/4"	3/4"	1"	1"	1"
SPEED							
Max speed km/h	9	10	10	10	11	11	13
STEERING							
Servoassisted							x
Steering knob							x
Height adjustable steering wheel			x	x	x	x	x
Chain/wire	x	x	x	x			
Chain/chain					x	x	x
SEAT							
Backrest with additional height					x	x	x
Foldable armrest							x
Suspended seat	x	x	x				
Comfort suspended seat				x	x	x	x
WHEEL							
16"	x	x	x	x			
17"					x	x	x
Double ball bearings					x	x	x
FEATURES							
Mechanic PTO	x	x	x	x	x		
Electrical PTO						x	x
Elektrical cutting height adj.					x	x	x
Speed cruiser					x	x	x
Switch and socket for rear rake							x
Harness for rear rake					x	x	x
Switch and socket for sand spreader							x
Pedal implement lifter	x	x	x	x	x		
Pedal implement lifter, servoassisted						x	x

2002 Models	SENATOR 13-6112-13	PRESIDENT 13-6113-13	COMFORT 13-6113-23	POWER 13-6113-93	ROYAL 13-6114-13	PRO 16 13-6216-13	PRO 20 13-6221-13	PRO 20 Cat 13-6221-23	PRO DIESEL 13-6231-13
MOTOR									
B&S I/C Quiet	x	x	x						
B&S Vanguard				x		x	x	x	
Honda GCV 520					x				
Hatz 1B40W									x
Cylinders/Hp	1/12,5	1/12,5	1/15,5	2/18	2/14	2/16	2/20	2/20	1/11
FUEL									
Big Tank	x	x	x	x	x	x	x	x	x
Fuel meter					x	x	x	x	
External fuel cap	x	x	x	x	x	x	x	x	
TRANSMISSION									
Gearbox 5+R	MST205								
HST		K46	K46	K46	K46	K62	K66	K66	K66
Switchable differential lock						x	x	x	x
Wheel shaft dia	3/4"	3/4"	3/4"	3/4"	3/4"	1"	1"	1"	1"
SPEED									
Max speed km/h	9	10	10	10	10	11	12	12	12
STEERING									
Servoassisted							x	x	x
Steering knob							x	x	x
Height adjustable steering wheel		x	x	x	x	x	x	x	x
Chain/wire	x	x	x	x	x				
Chain/chain						x	x	x	x
SEAT									
Backrest with additional height						x	x	x	x
Foldable armrest							x	x	x
Suspended seat	x	x	x	x					
Comfort suspended seat					x	x	x	x	x
WHEEL									
16"	x	x	x	x	x				
17"						x	x	x	x
Double ball bearings						x	x	x	x
FEATURES									
Mechanic PTO	x	x	x	x	x	x			
Electrical PTO							x	x	x
Elektrical cutting height adj.					x	x	x	x	x
Speed cruiser					x	x	x	x	x
Switch and socket for rear rake							x	x	x
Harness for rear rake						x	x	x	x
Switch and socket for sand spreader							x	x	x
Harness for sand spreader						x	x	x	x
Pedal implement lifter	x	x	x	x	x	x			
Hydraulic implement lifter							x	x	x

2003 Models	SENATOR 13-6112-14	COMFORT 13-6113-24	C UNLIMITED 13-6113-34	PRESIDENT 13-6113-14	GOVERNOR 13-6113-84	POWER 13-6113-94	ROYAL 13-6114-14	PRO 16 13-6216-14	PRO 20 13-6221-14	PRO 20 Cat 13-6221-24	PRO DIESEL 13-6231-14
MOTOR											
B&S mod 28	x			x	x						
B&S mod 282H I/C		x	x				x				
B&S Intek						x					
Honda GCV 530							x				
B&S Vanguard								x	x	x	
Hatz 1B40W											x
Cylinders/Hp	1/12,5	1/15,5	1/15,5	1/12,5	1/12,5	1/18	2/14	2/16	2/20	2/20	1/11
FUEL											
Big Tank	x	x	x	x	x	x	x	x	x	x	x
Fuel meter			x				x	x	x	x	
External fuel cap	x	x	x	x	x	x	x	x	x	x	
TRANSMISSION											
Gearbox 5+R	MST205										
HST		K46	K46	K46	K46	K46	K46	K62	K66	K66	K66
Switchable differential lock								x	x	x	x
Wheel shaft dia	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	1"	1"	1"	1"
SPEED											
Max speed km/h	9	10	10	10	10	10	10	11	12	12	12
STEERING											
Hydraulic servoassisted									x	x	x
Steering knob									x	x	x
Height adj. steering wheel		x	x	x	x	x	x	x	x	x	x
Chain/wire	x	x	x	x	x	x	x				
Chain/chain								x	x	x	x
SEAT											
Backrest with additional height								x	x	x	x
Foldable armrest									x	x	x
Suspended seat, pivot	x	x		x	x	x					
Suspended seat, vertical			x								
Comfort suspended seat							x	x	x	x	x
WHEEL											
16"	x	x	x	x	x	x	x				
17"								x	x	x	x
Double ball bearings								x	x	x	x
FEATURES											
Mechanic PTO	x	x	x	x	x	x	x	x			
Electrical PTO									x	x	x
Elektrical cutting height adj.							x	x	x	x	x
Speed cruiser							x	x	x	x	x
Switch and socket for rear rake									x	x	x
Harness for rear rake								x	x	x	x
Switch/socket, sand spreader									x	x	x
Harness for sand spreader								x	x	x	x
Pedal implement lifter	x	x	x	x	x	x	x	x			
Hydraulic implement lifter									x	x	x

2004 Models	COMFORT 13-6113-25	PRESIDENT 13-6113-15	ROYAL 13-6114-15	COMPACT 13-6101-15	COMPACT HST 13-6103-15	POWER 13-6113-95	JUBILEE 13-6113-55	PRO 16 13-6216-15	PRO 20 13-6221-15	PRO 20 Cat 13-6221-25	PRO DIESEL 13-6231-15
MOTOR											
B&S mod 21		x		x							
B&S mod 282H I/C	x				x						
B&S Intek						x					
Honda GCV 530			x								
B&S Vanguard							x	x	x	x	
Hatz 1B40W											x
Cylinders/Hp	1/15,5	1/13,5	2/14	1/12,5	1/15,5	2/18	2/16	2/16	2/20	2/20	1/11
FUEL											
Fuel meter			x					x	x	x	
External fuel cap	x	x	x	x	x	x	x	x	x	x	
TRANSMISSION											
Gearbox 5+R				Dana							
HST	K46	K46	K46		K46	K46	K46	K62	K66	K66	K66
Switchable differential lock								x	x	x	x
Wheel shaft dia	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	1"	1"	1"	1"
SPEED											
Max speed km/h	10	10	10	10	10	10	10	11	12	12	12
STEERING											
Hydraulic servoassisted									x	x	x
Steering knob									x	x	x
Height adj. steering wheel	x	x	x	no	no	x	no	x	x	x	x
Chain/wire	x	x	x	x	x	x	x				
Chain/chain								x	x	x	x
SEAT											
Backrest with additional height								x	x	x	x
Foldable armrest									x	x	x
Suspended seat, pivot	x	x		x	x	x	x				
Suspended seat, vertical											
Comfort suspended seat			x					x	x	x	x
WHEEL											
16"	x	x	x	x	x	x	x				
17"								x	x	x	x
Double ball bearings								x	x	x	x
FEATURES											
Mechanic PTO	x	x	x	x	x	x	x	x			
Electrical PTO									x	x	x
Elektrical cutting height adj.			x					x	x	x	x
Speed cruiser			x					x	x	x	x
Switch and socket for rear rake									x	x	x
Harness for rear rake								x	x	x	x
Switch/socket, sand spreader									x	x	x
Harness for sand spreader								x	x	x	x
Pedal implement lifter	x	x	x	x	x	x	x	x			
Hydraulic implement lifter									x	x	x

2005 Models	COMFORT 13-6122-11	ROYAL 13-6123-11	COMPACT 13-6101-16	COMPACT 13-6102-16	COMPACT 13-6103-16	PRO 16 13-6216-16	PRO DIESEL 13-6231-16
MOTOR							
B&S mod 21			x	x			
B&S mod 282H I/C	x				x		
B&S Intek							
Honda GCV 530		x					
B&S Vanguard						x	
Hatz 1B40W							x
Cylinders/Hp	1/15,5	2/14	1/12,5	1/13,5	1/15,5	2/16	1/11
FUEL							
Fuel meter		x				x	
External fuel cap	x	x	x	x	x	x	
TRANSMISSION							
Gearbox 5+R			Dana				
HST	K46	K46		K46	K46	K62	K66
Switchable differential lock						x	x
Wheel shaft dia	3/4"	3/4"	3/4"	3/4"	3/4"	1"	1"
SPEED							
Max speed km/h	10	10	10	10	10	11	12
STEERING							
Hydraulic servoassisted							x
Steering knob							x
Height adj. steering wheel	x	x	x	x	x	x	x
Chain/wire			x	x	x		
Chain/chain	x	x				x	x
SEAT							
Backrest with additional height						x	x
Foldable armrest							x
Suspended seat, pivot	x		x	x	x		
Suspended seat, vertical		x				x	x
WHEEL							
16" x 6.00			x	x	x		
16" x 7.50	x	x					
17" x 8.00						x	x
Double ball bearings						x	x
FEATURES							
Mechanic PTO	x	x	x	x	x	x	
Electrical PTO							x
Elektrical cutting height adj.		x				x	x
Speed cruiser		x				x	x
Switch and socket for rear rake							x
Harness for rear rake						x	x
Switch/socket, sand spreader							x
Harness for sand spreader						x	x
Pedal implement lifter	x	x	x	x	x	x	
Hydraulic implement lifter							x

2006 Models	COMPACT 13-6101-17	COMPACT HST 13-6102-17	COMPACT HST 13-6103-17	COMPACT 4WD 13-6104-17	EXCELLENT 13-6113-56	PRESIDENT 13-6113-17	FARMER 13-6133-36	COMFORT 13-6182-12	ROYAL 13-6183-12	PRESTIGE 4WD 13-6185-12	DIESEL 13-6180-32	DIESEL 4WD 13-6181-32	PRO 16 4WD 13-6241-12	PRO Svan 4WD 13-6241-22	PRO 20 4WD 13-6244-12	PRO 25 4WD 13-6246-12
MOTOR																
B&S mod21 I/C	X															
B&S mod 21 I/C		X				X										
B&S mod282H I/C			X	X												
Honda GCV530									X							
Honda GXV530														X		
B&S Vanguard					X								X			
B&S Vanguard															X	
Kohler Courage SV 540										X						
Kohler Command Pro																X
Hatz B40 Diesel							X				X	X				
Cylinders/Hp	1/12,5	1/13,5	1/15,5	1/15,5	2/16	1/13,5	1/11	2/16	2/16	1/18	1/11	1/11	2/16	2/16	2/20	2/25
PETROL TANK																
6 L	X	X	X	X												
12 L					X	X		X	X	X	X	X				
14 L													X	X	X	X
TRANSMISSION																
Gearbox 5+R	Dana															
HST K46		X	X		X	X	X	X	X		X					
KTM -7 4WD				X						X		X				
KTM -10 4WD													X	X	X	X
Wheel shaft dia	3/4"	3/4"	3/4"	3/4"	3/4"	1"	1"	1"	1"	1"	1"	1"	1"	1"	1"	1"
SPEED																
Max speed km/h	9	9	9	9	10	10	10	10	10	10	10	10	11	11	11	11
STEERING																
Hydraulic servoassisted												X		X	X	X
Steering knob								X	X		X	X		X	X	X
Chain/wire	X	X	X	X	X	X	X									
Chain/chain								X	X	X	X	X	X	X	X	X
Height adj. steering wheel					X	X	X	X	X	X	X	X	X	X	X	X
Bushings steering rod	X	X	X	X	X	X	X	X	X	X	X					
Ball bearings steering rod												X	X	X	X	X
SEAT																
Backrest with additional height												X	X	X	X	X
Foldable armrest												X		X	X	X
Suspended seat, pivot	X	X	X	X	X	X	X	X	X	X	X					
Suspended seat, vertical												X	X	X	X	X
WHEEL																
16" x 6.00	X	X	X	X												
16" x 7.50					X	X	X	X	X	X	X	X				
17" x 8.00													X	X	X	X
FEATURES																
Mechanic PTO	X	X	X	X	X	X	X	X	X	X	X	X				
Electrical PTO													X	X	X	X
Elektrical cutting height adj.								X	X	X	X	X	X	X	X	X
Speed cruiser						X		X	X	X	X	X	X	X	X	X
Switch and socket for rear rake												X		X	X	X
Harness for rear rake												X	X	X	X	X
Switch/socket, sand spreader												X		X	X	X
Harness for sand spreader												X	X	X	X	X
Pedal implement lifter	X	X	X	X	X	X	X	X	X	X	X		X			
Hydraulic implement lifter												X		X	X	X

2007 Models	COMPACT 13-6101-18	COMPACT HST 13-6102-18	COMPACT HST 13-6103-18	COMPACT 4WD 13-6104-18	UNLIMITED 14 13-6184-53	PRESIDENT 14 13-6184-03	POWER 18 13-6187-13	EXCELLENT 16 13-6189-03	UNLIMITED 2WD 13-6190-03	UNLIMITED 4WD 13-6191-13	COMFORT 13-6182-13	ROYAL 13-6183-13	PRESTIGE 4WD 13-6185-13	DIESEL 13-6180-33	DIESEL 4WD 13-6181-33	PRO 16 4WD 13-6241-13	PRO Svan 4WD 13-6241-23	PRO 20 4WD 13-6244-13	PRO 25 4WD 13-6246-13
MOTOR																			
B&S mod 21 I/C	X																		
B&S mod 21 I/C		X			X	X													
B&S mod282H I/C			X	X							X								
B&S Intec 18									X	X									
Honda GCV530												X							
Honda GXV530																	X		
B&S Vanguard								X								X			
B&S Vanguard																		X	
Kohler Courage SV 540							X						X						
Kohler Command Pro																			X
Hatz B50 Diesel														X	X				
Power, Hp	12,5	13,5	15,5	15,5	13,5	13,5	18	16	18	18	15,5	16	18	12	12	16	16	20	25
Cylinders	1	1	1	1	1	1	1	2	1	1	1	2	1	1	1	2	2	2	2
PETROL TANK																			
6 L	X	X	X	X															
12 L					X	X	X	X	X	X	X	X	X	X	X				
14 L																X	X	X	X
TRANSMISSION																			
Gearbox 5+R	Dana																		
HST K46		X	X		X	X	X	X	X		X	X		X					
KTM -7 4WD				X						X			X		X				
KTM -10 4WD																X	X	X	X
Wheel shaft dia	3/4"	3/4"	3/4"	3/4"	1"	1"	1"	1"	1"	1"	1"	1"	1"	1"	1"	1"	1"	1"	1"
SPEED																			
Max speed km/h	9	9	9	9	10	10	10	10	10	10	10	10	10	10	10	11	11	11	11
STEERING																			
Hydraulic servoassisted															X		X	X	X
Steering knob									X		X	X		X	X		X	X	X
Chain/wire	X	X	X	X	X	X													
Chain/chain							X	X	X	X	X	X	X	X	X	X	X	X	X
Height adj. steering wheel											X	X	X	X	X	X	X	X	X
Bushings steering rod	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
Ball bearings steering rod															X	X	X	X	X
SEAT																			
Backrest with additional height															X	X	X	X	X
Foldable armrest															X		X	X	X
Suspended seat, pivot	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
Suspended seat, vertical															X	X	X	X	X
One hand sliding control					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
WHEEL																			
16" x 6.00	X	X																	
16" x 7.50			X	X	X	X	X	X	X	X	X	X	X	X	X				
17" x 8.00																X	X	X	X
FEATURES																			
Mechanic PTO	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
Electrical PTO															X	X	X	X	X
Elektrical cutting height adj.								X	X	X	X	X	X	X	X	X	X	X	X
Speed cruiser															X	X	X	X	X
Switch and socket for rear rake															X	X	X	X	X
Harness for rear rake															X	X	X	X	X
Switch/socket, sand spreader															X	X	X	X	X
Harness for sand spreader															X	X	X	X	X
Pedal implement lifter	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X			
Adjustable drive pedal									X	X	X	X	X	X	X	X	X	X	X
Hydraulic implement lifter with hand lever valve															X		X	X	X

Campain machines

Outside the ordinary sortiment, the following campain machines are manufactured during 2000-2005.

Introduction time	Article number	Name	Motor	Transm.	PTO	Deck	Remark/ Other items are similar to
Autumn 2000	13-6113-11	President	B&S I/C 12,5	HST	mechanic	102M	Incl. snow equipm.
Autumn 2001	13-6113-22	Comfort	B&S I/C 15,5 OHV	HST	mechanic	107M plus	President
Spring 2002	13-6113-93	Power	B&S Vanguard 18	HST	mechanic		President
Autumn 2002	13-6113-13	President	B&S I/C 12,5	HST	mechanic	92M	
Spring 2003	13-6113-94	Power	B&S intek 18	HST	mechanic		President
Spring 2003	13-6113-34	Comfort Unlimited	B&S I/C 15,5 OHV	HST	mechanic		Seat susp Fuel meter Comfort
Autumn 2003	13-6113-84	Governor	B&S I/C 12,5	HST	mechanic	92M	President
Autumn 2003	13-6113-24	Comfort	B&S I/C 15,5 OHV	HST	mechanic	107M	President
Autumn 2004	13-6113-55	Jubilee	B&S Vanguard 16	HST	mechanic		President
Spring 2005	13-6113-15	President	B&S 13.5 OHV	HST	mechanic	107M	Older steering

1.6.2 Motors

Below is listed only oil and filter data for the motors.

Regarding additional information about motors, contact the respective representative in the actual country.

Oil and filter data	Oil filter change interval	Oil change interval	Volume without filter	Volume with filter	Oil quality	Oil grade
MOTOR						
B&S single cylinder	-	50 h/12 m		1.4 L	SF or higher	SAE 30/<4°C, 5W-30
B&S Intek twin	100 h	50 h/12 m	1,8 L	1,9 L	SF or higher	SAE 30/<4°C, 5W-30
B&S Vanguard twin	100 h	50 h/12 m	1,3 L	1,4 L	SF or higher	SAE 30/<4°C, 5W-30
Honda twin	-	100 h/6 m		0.9 L	SF or higher	SAE 10W-40/<-20°C, 5W-30
Hatz diesel	*	200 h/12 m		1.7 L	API CD or higher	SAE 10W-40
Kohler Courage	100 h/12 m	100 h/12 m	1,9 L	2,0 L	SF or higher	SAE 10W-30
Kohler Command	200 h/12 m	100 h/12 m	2,0 L	2,1 L	SF or higher	SAE 10W-30

*** = Metal filter, shall be cleaned and refitted after 1000 hours of operation.**

1.6.3 General tightening torque

Unless otherwise stated, the following tightening torque are applicable for screws and nuts on the machine:

Tightening torques

Thread	Torque
M5	5 Nm
M6	9 Nm
M8	22 Nm
M10	45 Nm

1.7 Instructions for use

Some procedures, e.g. changing motor oil, motor filter etc., are refered to the instruction for use, delivered with the actual machine.

The table below shows the numbers of the documents for the respective machines.

Most of the instruction of use are written in 16 languages. If 2 numbers are denoted, the instruction for use is divided in two parts. The first part always contains the languages SV, FI, DA, NO, DE, EN, FR and NL.

Item number	Denomination	Manual
13-6101-16	Park Compact	8211-1031-01 8211-1032-01
13-6101-17	Park Compact	8211-0553-01 8211-0554-01
13-6101-18	Park Compact 13	8211-0001-70 8211-0002-70
13-6102-16	Park Compact HST	8211-1031-01 8211-1032-01
13-6102-17	Park Compact HST	8211-0553-01 8211-0554-01
13-6102-18	Park Compact 14	8211-0001-70 8211-0002-70
13-6102-47	Park Compact HST	8211-0553-01 8211-0554-01
13-6103-16	Park Compact HST	8211-1031-01 8211-1032-01
13-6103-17	Park Compact HST	8211-0553-01 8211-0554-01
13-6103-18	Park Compact 16	8211-0001-70 8211-0002-70
13-6103-46	Park Compact HST	8211-1031-01 8211-1032-01
13-6103-47	Park Compact HST	8211-0553-01 8211-0554-01
13-6103-48	Park Compact 16	8211-0001-70 8211-0002-70
13-6104-17	Park Compact HST 4WD	8211-0553-01 8211-0554-01
13-6104-18	Park Compact 16 4WD	8211-0001-70 8211-0002-70
13-6104-47	Park Compact HST 4WD	8211-0553-01 8211-0554-01
13-6104-48	Park Compact 16 4WD	8211-0001-70 8211-0002-70
13-6113-17	President	8211-0276-10
13-6113-55	Park Jubilee	8211-0276-06 8211-0276-07
13-6113-56	Park Excellent	8211-0276-08 8211-0276-09
13-6122-11	Park Comfort	8211-0276-06 8211-0276-07
13-6122-41	Park Comfort	8211-0276-06 8211-0276-07
13-6123-11	Park Royal	8211-0276-06 8211-0276-07
13-6123-41	Park Royal	8211-0276-06 8211-0276-07
13-6125-11	Park Prestige	8211-0540-01 8211-0545-01
13-6125-41	Park Prestige	8211-0540-01 8211-0545-01
13-6133-36	Park Farmer	8211-0551-01 8211-0552-01
13-6180-32	Park Diesel	8211-0555-01 8211-0556-01
13-6180-33	Park Diesel	8211-0007-70 8211-0008-70
13-6181-32	Park Diesel 4WD	8211-0555-01 8211-0556-01
13-6181-33	Park Diesel 4WD	8211-0007-70 8211-0008-70
13-6182-12	Park Comfort	8211-0562-01 8211-0563-01
13-6182-13	Park Comfort 16	8211-0003-70 8211-0004-70
13-6182-42	Park Comfort	8211-0562-01 8211-0563-01
13-6183-12	Park Royal	8211-0562-01 8211-0563-01
13-6183-13	Park Royal 16	8211-0003-70 8211-0004-70

Item number	Denomination	Manual
13-6183-42	Park Royal	8211-0562-01 8211-0563-01
13-6184-03	Park President 14	8211-0014-70 8211-0015-70
13-6184-53	Park Unlimited 14	8211-0014-70 8211-0015-70
13-6185-12	Park Prestige 4WD	8211-0562-01 8211-0563-01
13-6185-13	Park Prestige 18 4WD	8211-0003-70 8211-0004-70
13-6185-42	Park Prestige 4WD	8211-0562-01 8211-0563-01
13-6185-43	Park Prestige 18 4WD	8211-0003-70 8211-0004-70
13-6187-13	Park Power 18	8211-0014-70 8211-0015-70
13-6189-03	Park Excellent 16	8211-0014-70 8211-0015-70
13-6190-03	Park Unlimited	8211-0017-70
13-6191-13	Park Unlimited 4WD	8211-0017-70
13-6192-23	Park Power 4WD	8211-0063-70
13-6194-23	Park Power 4WD	8211-0064-70
13-6216-16	Park Pro 16	8211-0276-06 8211-0276-07
13-6231-16	Park Pro Diesel	8211-0315-03 8211-0325-03
13-6241-11	Park Pro 16	8211-0540-01 8211-0545-01
13-6241-12	Park Pro 16 4WD	8211-0540-02 8211-0545-02
13-6241-13	Park Pro 16 4WD	8211-0005-70 8211-0006-70
13-6241-22	Park Pro Svan 4WD	8211-0540-02 8211-0545-02
13-6241-23	Park Pro Svan 4WD	8211-0005-70 8211-0006-70
13-6241-41	Park Pro 16	8211-0540-01 8211-0545-01
13-6241-42	Park Pro 16 4WD	8211-0540-02 8211-0545-02
13-6241-43	Park Pro 16 4WD	8211-0005-70 8211-0006-70
13-6244-11	Park Pro 20	8211-0540-01 8211-0545-01
13-6244-12	Park Pro 20 4WD	8211-0540-02 8211-0545-02
13-6244-13	Park Pro 20 4WD	8211-0005-70 8211-0006-70
13-6244-21	Park Pro 20 Cat	8211-0540-01 8211-0545-01
13-6244-41	Park Pro 20	8211-0540-01 8211-0545-01
13-6244-42	Park Pro 20 4WD	8211-0540-02 8211-0545-02
13-6244-43	Park Pro 20 4WD	8211-0005-70 8211-0006-70
13-6246-11	Park Pro 25	8211-0540-01 8211-0545-01
13-6246-12	Park Pro 25 4WD	8211-0540-02 8211-0545-02
13-6246-13	Park Pro 25 4WD	8211-0005-70 8211-0006-70
13-6246-41	Park Pro 25	8211-0540-01 8211-0545-01
13-6246-42	Park Pro 25 4WD	8211-0540-02 8211-0545-02
13-6246-43	Park Pro 25 4WD	8211-0005-70 8211-0006-70

2 Chassis and body

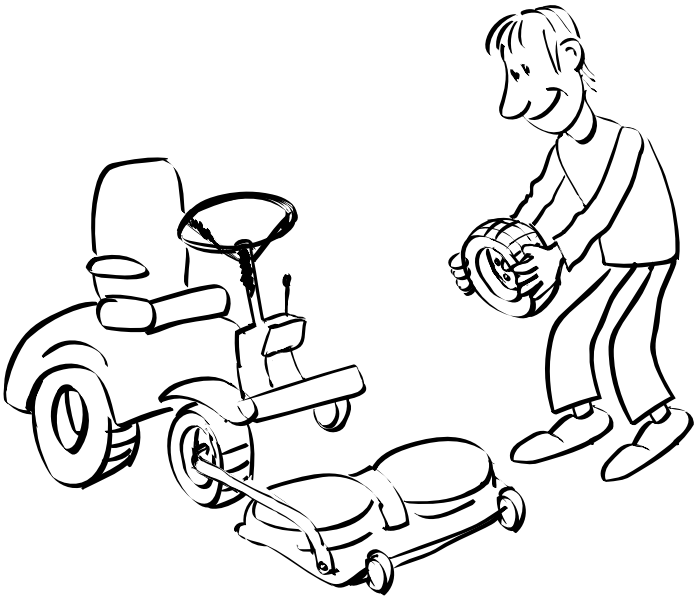
Contents in this chapter

2.1 Description 2
2.2 Articulation point 3
2.2.1 Radial deterioration 3
2.2.2 Axial deterioration 4
2.3 Lifting mechanism, manual 6
2.3.1 Description 6
2.3.2 Dismantling 6
2.3.3 Repair of lifting lock 11
2.3.4 Assembly 11
2.4 Lifting mechanism, hydraulic ... 13
2.4.1 Description 13
2.4.2 Dismantling 13
2.4.3 Assembly 16
2.5 Seat suspension 17
2.5.1 Basic Type 17
2.5.2 Pro Type ´ 17
2.6 Rear wheel 18
2.6.1 Wheel with separate hub 18
2.6.2 Wheel with direct mounted rim 19
2.7 Cruise control 20
2.7.1 Description 20
2.7.2 Replace and repair 20
2.8 Lubrication chassis 21
2.9 Hydraul pump 22
2.9.1 Dismantling 22
2.9.2 Assembly 24

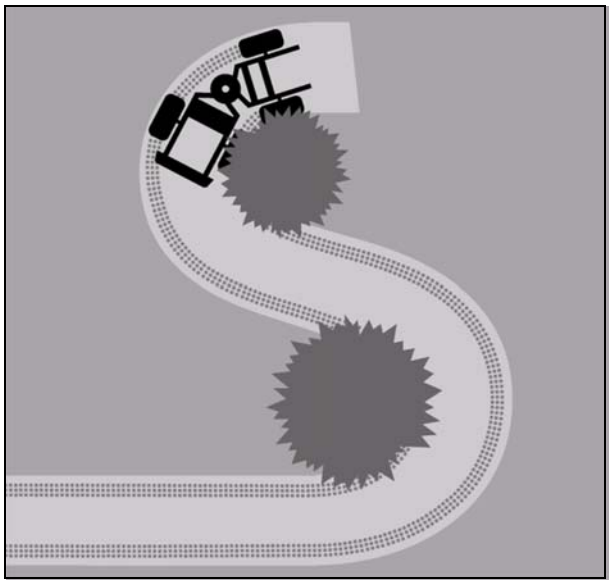
General

To facilitate the driving, handling of work equipment and to make it comfortable for the driver, the machines are equipped with a various number of aid equipments. These equipments are mainly the same for all the machines covered by this manual, but in some cases configurated in different ways. Where divergences occour between the machines, particular instructions are given for each particular equipment.

This chapter gives a brief description of the equipments and describes their repair and replacements.

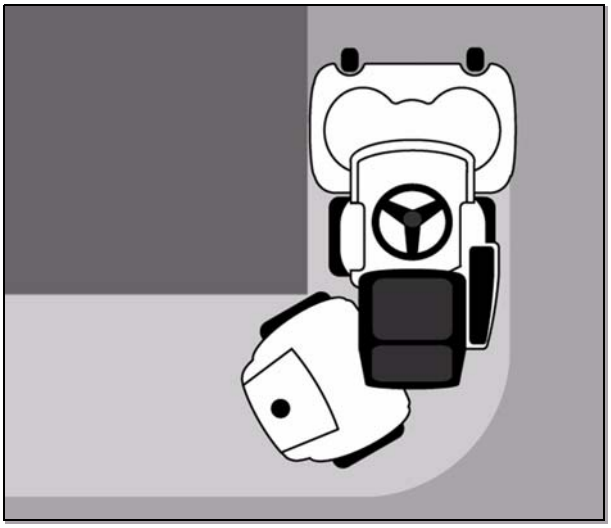


2.1 Description



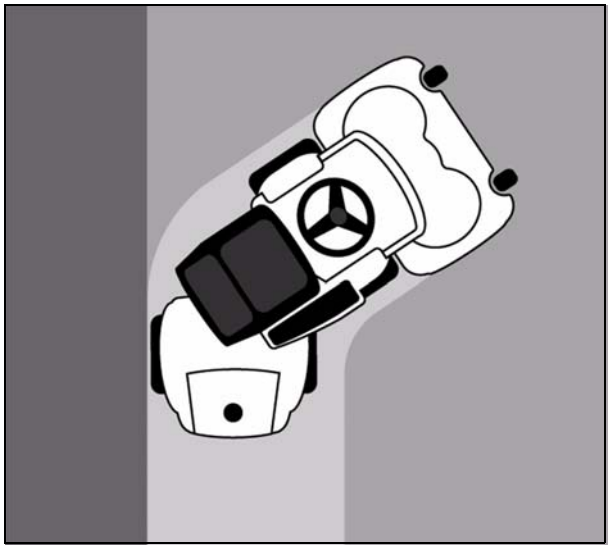
The chassis is built up on and around a articulated frame with its articulation point in the middle. This configuration imply that both the front wheels and the rear wheels participate in the turning actions and the rear wheels follow the traces of the front wheels. This is a great advantage in common and a requirement when cutting around trees and corners. The rear wheel will never pass a bend in an inner circle and interfere with the obstruction.

This configuration also gives an optimal small uncut circle, when driving with maximal turning.



The articulated frame is also articulating in the vertical plane with ±5°. This makes it possible for all the four wheels to press evenly against the ground when the ground is bumpy.

To the chassis is also fitted control organs, which conduct operator commands to the actual device at the machine. I.e. wire and rod between brake and pedal, PTO wire, lifting mechanism, throttle wire, etc.



2.2 Articulation point

2.2.1 Radial deterioration

Validation

The articulation point consists of the following parts:

- Two articulated plain bearings.
- Shaft.
- Bushings and washers according to the respective spare parts book.

When the machine is new, there is a small radial play in the upper and lower articulated plain bearings. After a long terms of use, this play will be increased.

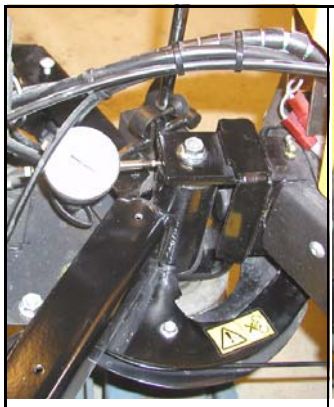
The limit value is 0.250 mm.

Wears can occour in the bearings themselves, between bearings and shaft and between shaft and clevis holes.

To measure the play in the upper part (upper bearing) proceed as follows:

1. Remove the motor hood and the spoiler in front of the motor.
2. Arrange a dial indicator with its adjustable stand as illustrated.
3. Read the value at the dial indicator.
4. Place a hydraulic jack under the pulley and lift carefully just until the articulation poins is unloaded.
5. Read the value at the dial indicator. The different between the two values is the radial play.

Since the upper part is most exposed to wear, it is not necessary to measure the lower part (lower bearing).



From right

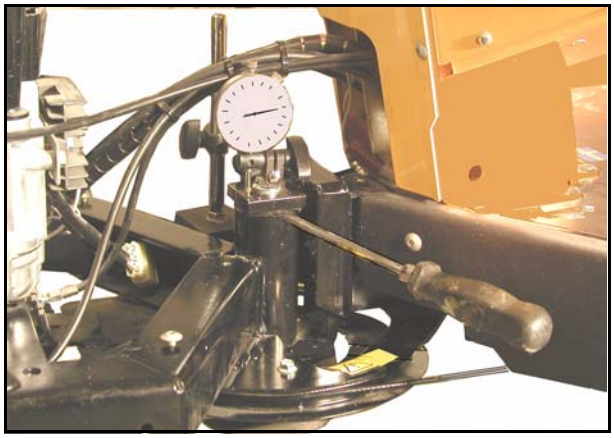
From left

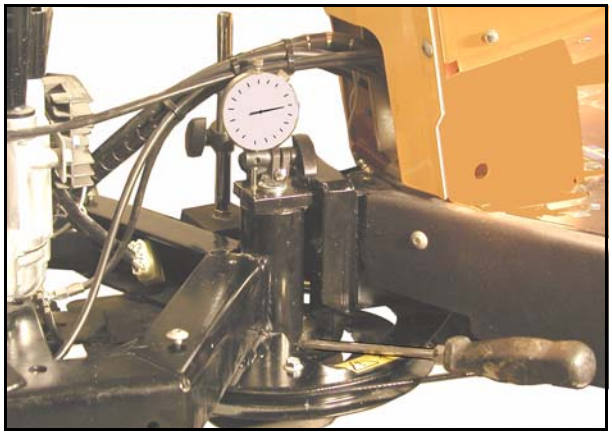
Repair

The clevis holes can be restored using an articulation point repair kit. The repair kit, with instructions, is supplied by the retail dealer.

2.2.2 Axial deterioration

After a long term of use, the axial play in the articulation point can increase. This have nothing to do with the machine performance or reliability, but can in some cases give a hearable noise. To validate and decrease the axial play proceed as follows:





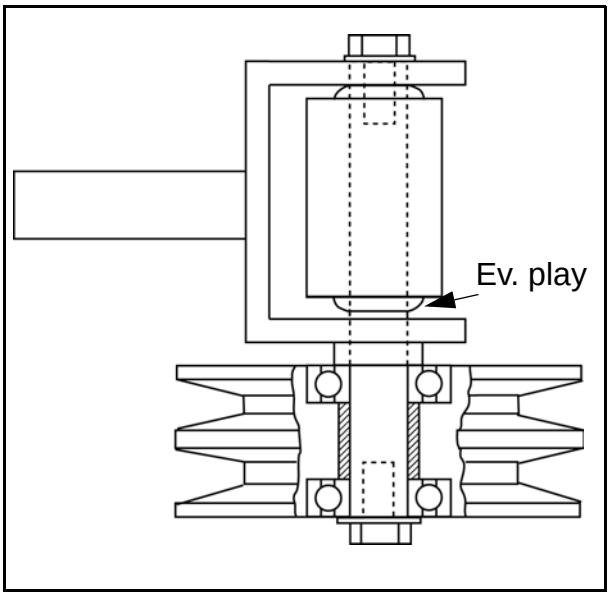
Validation

1. Remove the motor hood and the spoiler in front of the motor.
2. Arrange a dial indicator with its adjustable stand on the wire plate with the dial tip on the upper fork leg. See the figures.
3. Force the bearing tube, welded to the rear frame downwards. Use a big screwdriver as illustrated.
4. Read the value at the dial indicator.
5. Force the bearing tube upwards with the screwdriver. See the figure.
6. Read the value at the dial indicator. The different between the two values is the axial play.

Decreasing the axial play

Warning!

The axial play must be more than zero. The clevis is not allowed to press against the bearings. This will shorten the bearing durability.

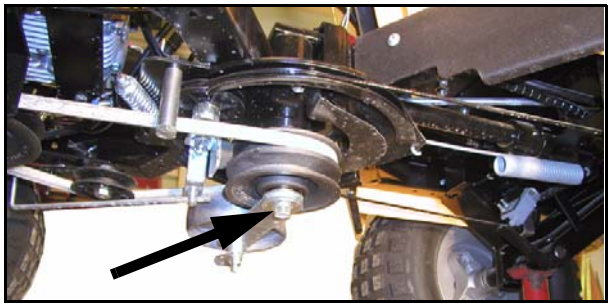


The axial play is determined of the distance between the clevis fork arms. The fork arms are pinched together when the screws in the shaft ends are tightened.

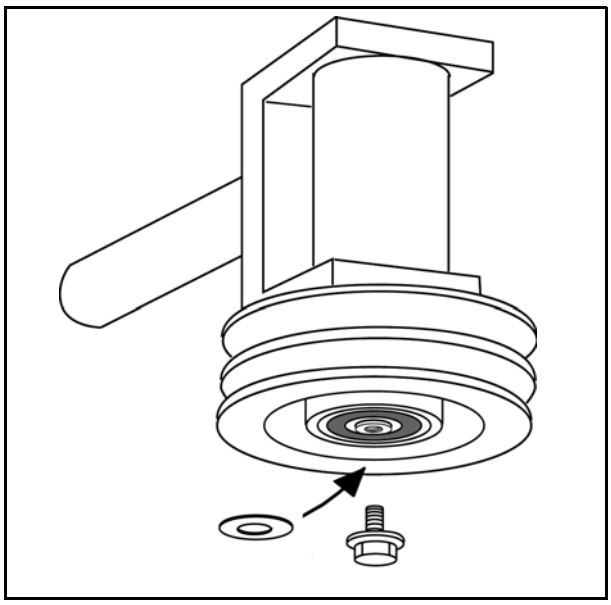
Since the screws can pinch the fork arms to an external distance which is similar to the shaft length, there can occour a remaining play.

This play is decreased if shim/shims is mounted against the bearing inner ring to force the fork legs further.

Mount she shim/shims as follows:



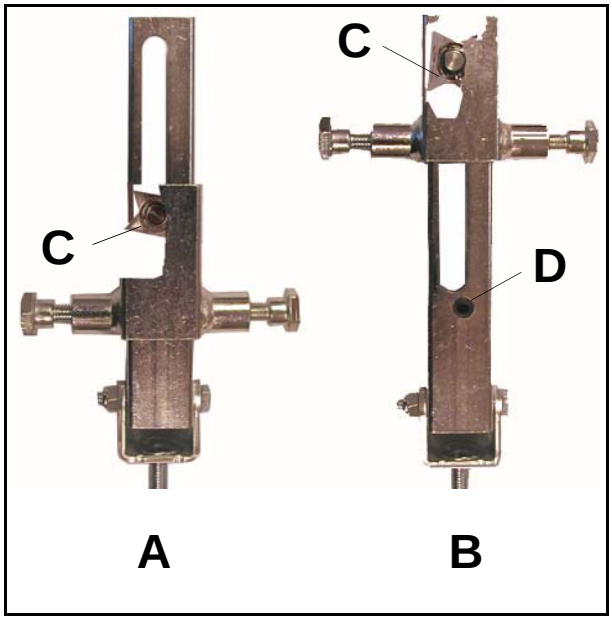
1. Remove the lower center screw from the shaft.
2. Remove the remaining details under the pulley, some models a washer only and some models have also a tension arm with bushings.
3. Now, the bearing inner ring is displayed. Choose shim/shims as follows:
   - The inner diameter of the shims shall be 17 mm. The shim shall press on the bearing inner ring. Not on the shaft.
   - The total thickness of the shim/shims is not allowed to exceed the axial play, determined under “Validation”.
     Ex. If the axial play is 1.1 mm, it is advisable to mount one shim, thickness 1.0 mm. This gives a play of 0.1 mm.
   - The remaining play shall not exceed 0.5 mm.



4. Apply some grease to the bearing and fit the desired shim/shims to the bearing inner ring.
5. Refit the details, dismounted under steps 1 and 2 above.

2.3 Lifting mechanism, manual

2.3.1 Description



The work equipment lifting arm is automatic locked in elevated position by pressing down the lifting pedal. Next time the pedal is pressed, the mechanism will release and the arm drops down.

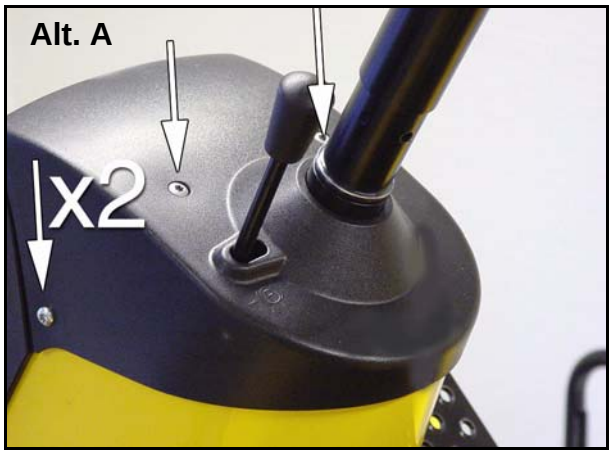
The locking function is created in the lifting lock. The principle is described below and shown in the figure.

A. Locked in lifted position by the ratchet (C).

B. Unlocked. Ratchet (C) is released.

C. Ratchet which is tilted by the pin (D) every time the pedal is pressed down.

2.3.2 Dismantling

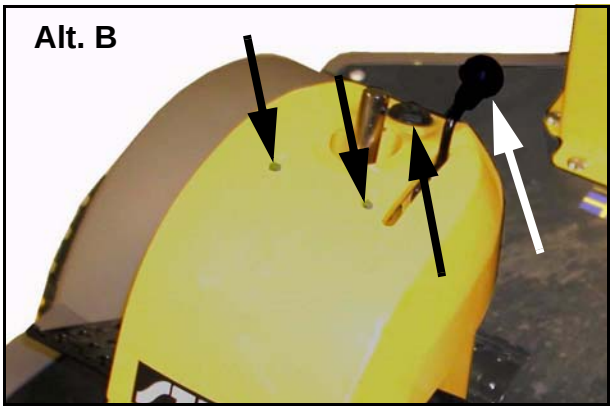


To dismantle the lifting lock it is normally necessary to dismantle the steering console. Nevertheless, it is possible for a skilful person to dismantle the lifting lock without releasing the steering console.

The dismantling is performed as follows:

1. Dismantle the steering wheel by tapping out the pin.

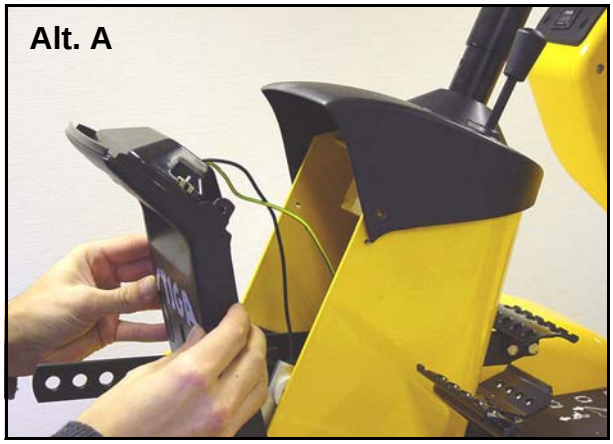
   If applicable, observe the spacers and the location when disassembly the steering wheel.
   See section 1.



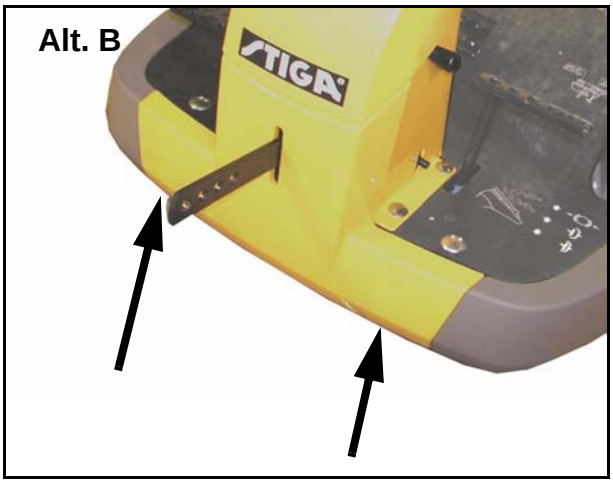
2. Remove the screws for the top cover according to alt. A or alt B..
   In alt. B (Compact) also remove the following:
   - The bullet from the throttle handle by twisting and pulling it simultaneously.
   - The ignition switch nut.

3. Alt. A:
   Dismantle the headlamp part of the front section.

   ! Note!
   It is not necessary to dismantle the top part of the front section, just lift it a few cm.

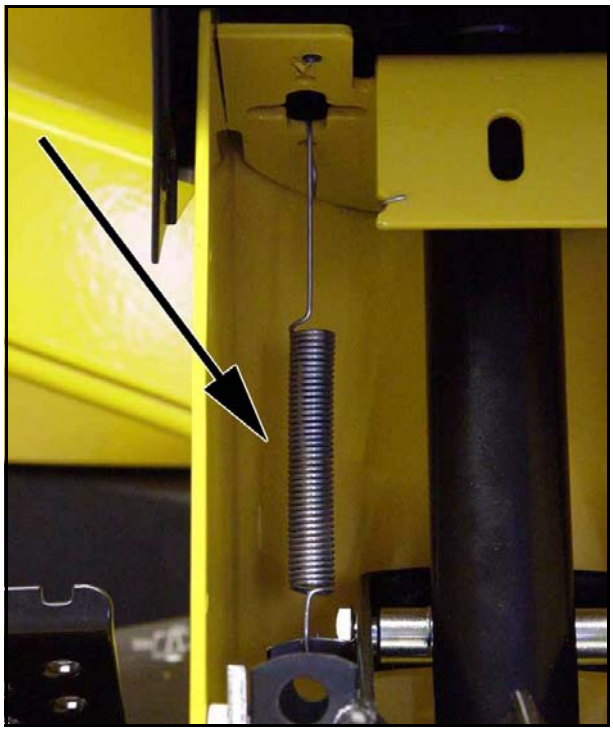


   Alt. B (Compact):
   Dismantle the front cover by unscrewing the two screws at the under side.

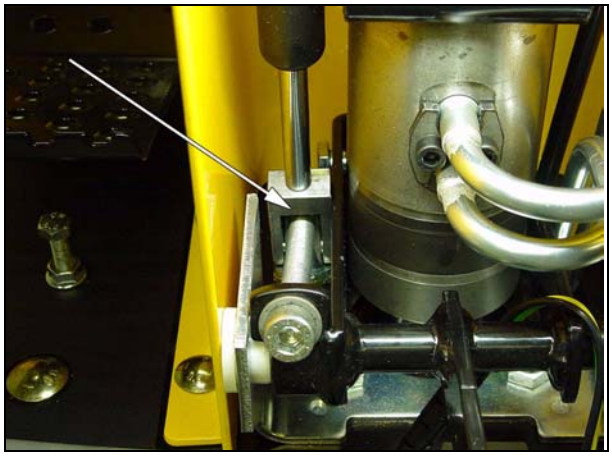


4A. <u>Implement lifter, equipped with mechanic return spring.</u>

   Unhook the return spring.



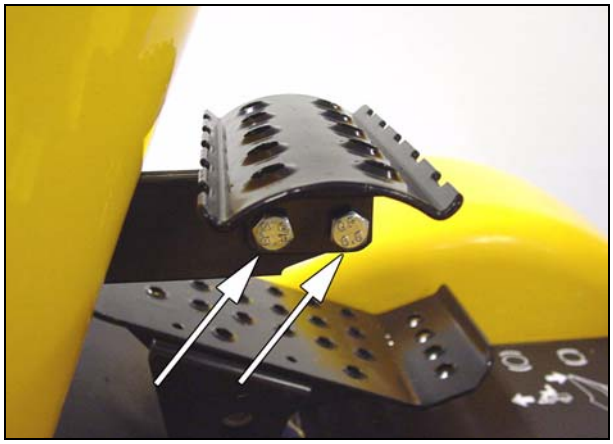
4B.Implement lifter, equipped with air spring.



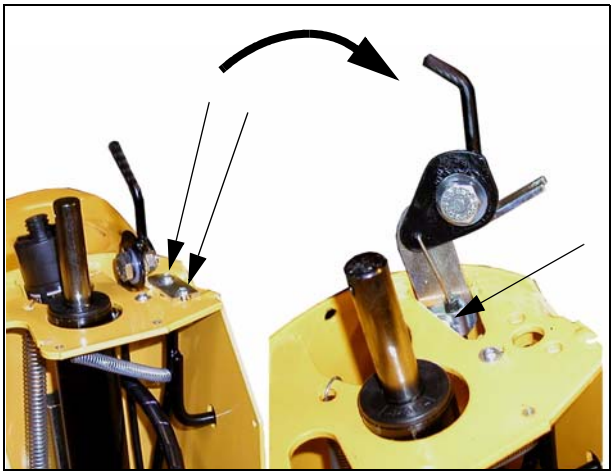
Warning!
The air spring pushes down the lifting fork with great force. To avoid personal injury it is extremely important to release the air spring before continuing.

Release the air spring by turning the adjusting screw so that the air spring comes as far as possible into the steering console.

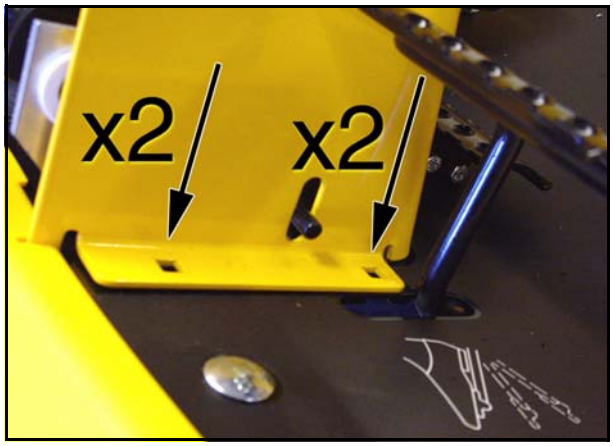
5. Dismantle the lifting pedal located on the lifting arm.



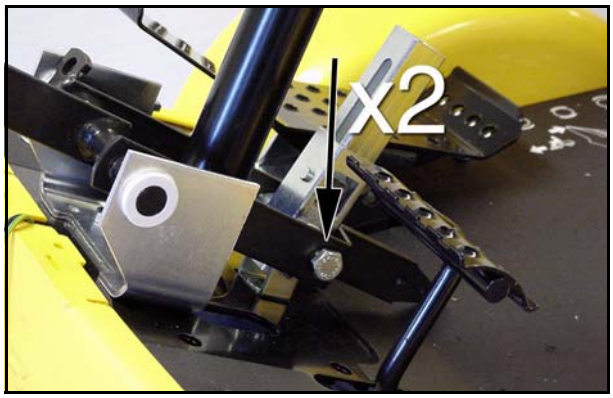
6. For Compact only:
   Dismantle the throttle control as follows:
   1. Loosen the control.
   2. Observe where the location of the conduit in the clamp to refit it in the same position.



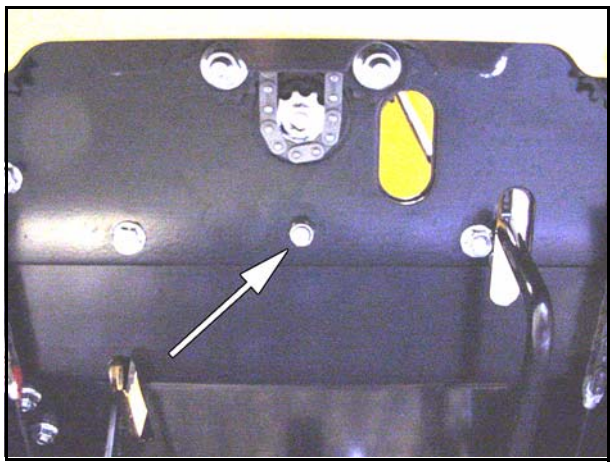
7. Remove the screws that hold the steering console at the floor plate, and lift off the steering console.



8. Remove the screws that hold the lifting fork at the lifting lock.

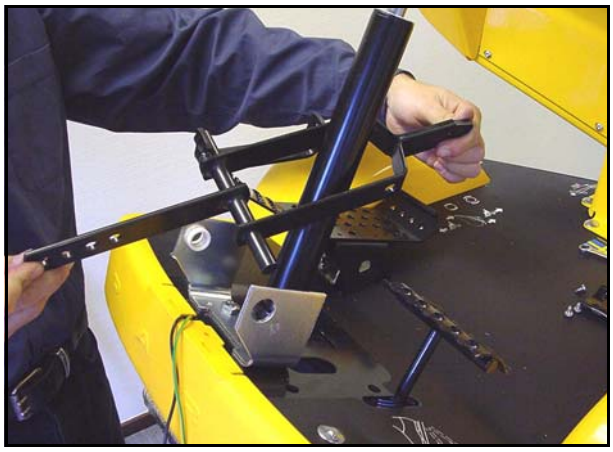


9. Remove the nut that holds the lifting lock on the underside of the floor plate, and remove the lifting lock.



10.Carefully dismantle the left bearing in the support with a screwdriver.

11.Remove the lifting fork from the support.

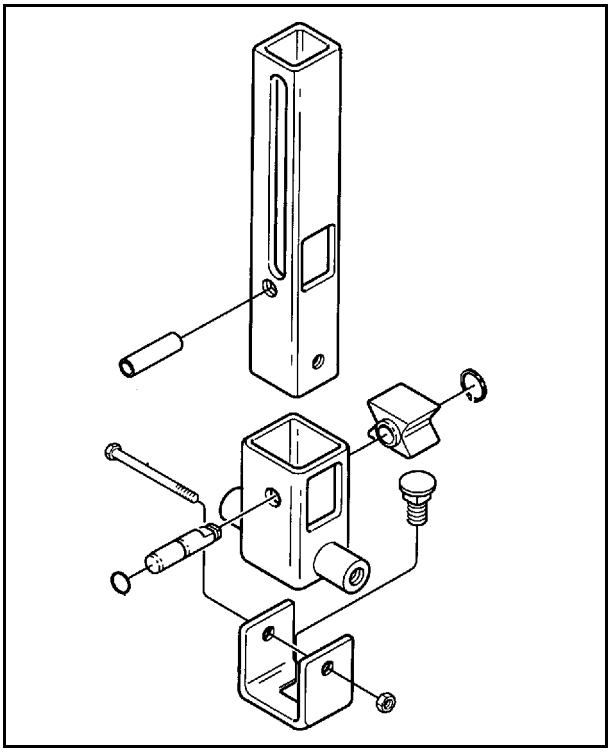


2.3.3 Repair of lifting lock

The lifting lock can be purchased as a complete spare part.

The parts can be lubricated with a thin lubricant, e.g. silicon spray, 5-56, WD40, or the like, if the lock jams.

Note!
Viscous lubricant such as consistent grease must not be used.



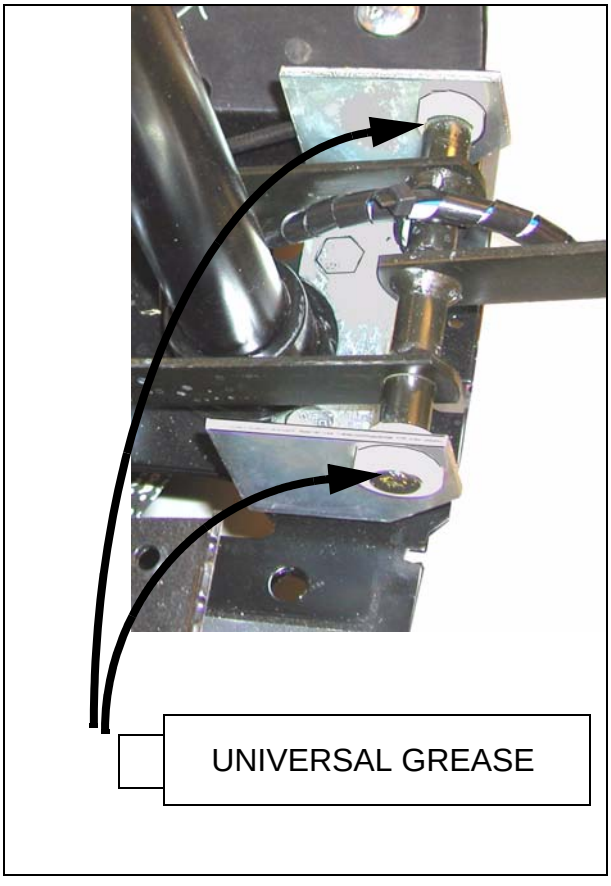
2.3.4 Assembly

Assemble in reverse order.
Check that the accessory lifter functions as intended by repeatedly lifting and lowering it.

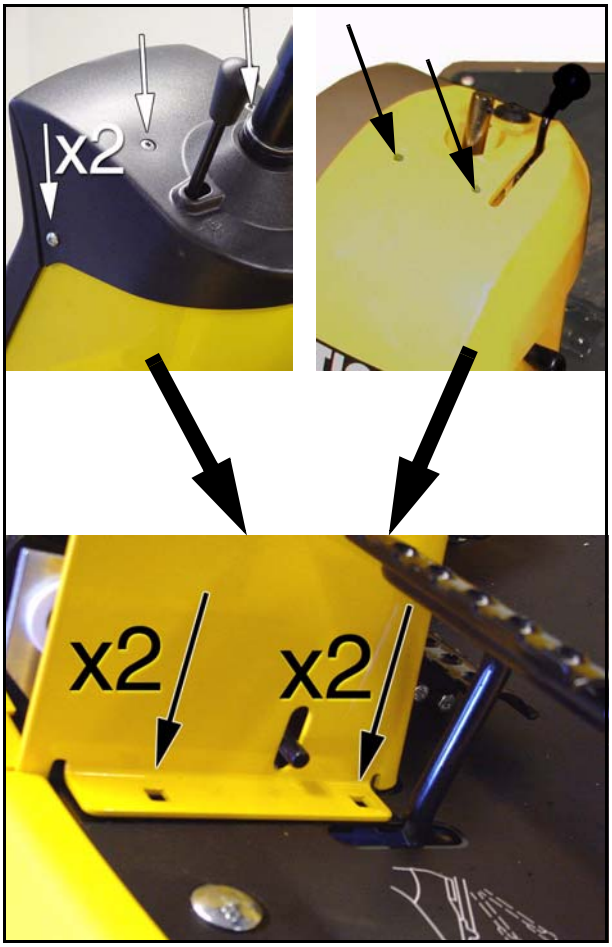
Notes!
Pay attention to the following notes during the assembly:

A. Apply a thin layer of universal grease to the plastic bushings at the lifter arm.

B. It does not matter how the lifting lock is fitted since it is symmetrical.



C. Fit the top cover before the consol screws are tightened.
The consol is aligned against the top cover.



D. The spring for the parking brake is easiest to fit with a hook of steel wire.

E. When fitting the throttle control at Compact, install the wire conduit as observed at the dismantling.

F. If applicable, observe the spacers and the location when reassembly the steering wheel.
See section 1.